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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,275	05/09/2005	Masayuki Hoshino	L9289.05132	9776

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EXAMINER

LAI, DANIEL

ART UNIT PAPER NUMBER

2634

DATE MAILED: 11/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/534,275

Applicant(s)

HOSHINO ET AL.

Examiner

Daniel Lai

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/09/2005, 08/25/2005, 09/06/2006 .

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to since it has more than 150 words. Correction is required. See MPEP § 608.01(b).

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Takai (US Patent 6,140,961, hereinafter Takai).

4. Regarding claims 1 and 7, Takai teaches a directivity control circuitry and method of using it for an adaptive antenna. Takai teaches a base station 53 transmits to mobile station 52 a reference signal (quality decision signal) referred to as pilot channel (col 5, line 57-59). Takai also teaches mobile station 52 send quality information to base station 53, and CPU 22 use the information to control directivity parameters (col. 7, line 6-12; col. 6, line 24-27). Takai further teaches the use of modulation and a directivity control 45 to make the directivity of the traffic

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channel identical (match) to the directivity of the pilot channel (col. 6, line 18-27). Based on this, the pilot channel is transmitted and traffic channel are transmitted with directivity.

5. Regarding claim 2, Takai teaches varying directivity at a constant speed (col. 6, line 40-42). Timing information can be determined because the speed of varying directivity is constant.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. Claims 3, 4, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al. (EP 1,206,051, hereinafter EP '051), in view of Hiramatsu (EP 0,851,609, hereinafter EP '609).

10. Regarding claim 3, EP '051 teaches a method of controlling directivity in a communication system to improve transmission efficiency comprising:

a reception quality measuring section 155 that measure reception quality (col. 9, paragraph 0072);

an array directivity switching determining section 251 that determines whether to change directivity at the time when a NACK signal is received (col. 10, paragraph 0075).

a transmission section that transmits modulated transmission signal that includes reception quality information (col.10, paragraph 0074).

11. According to specification of EP '051 and different directivity modulation sections, signals transmitted from communication apparatus 200 to communication apparatus 250 are transmitted with directivity (Fig. 2). Also, when apparatus 250 transmits reception quality information, it is at a time other than the switching time because directivity will not be switched unless it receives directivity switching signal from apparatus 250 (col. 11, paragraph 0083).

12. EP '051 teaches the directivity switching information (col. 10, paragraph 0075), but does not teach the directivity switching timing information. EP '609 teaches a base station apparatus for communicating with high-speed and low speed communication spread spectrum mobile users with different directivities. EP '609 teaches a circuit which receives values of the delay time sent from the base station (col. 12, line 23-25). This provides timing information for a receiver to modulate signals with different directivities (col. 11, line 5-38). EP '609 also teaches that such

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scheme can conserve power consumption at the receiver (col. 12, line 17-19). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to switch directivity at proper time and hence minimizes power consumption at the receiver, as taught by EP '609.

13. As of claim 4, EP '051 teaches a radio communication apparatus 200 comprising of a transmission array directivity controlling section 105 that assigns weight to transmission signal (transmission data) from the radio transmission section 104 (col. 9, paragraph 0067). Once signal is outputted to antenna 107, 108 and 109, transmission data will be transmitted to antenna 151 apparatus 250 with directivity (col. 9, paragraph 0067; Fig. 2). Note that the data can be used as quality measuring information because the communication apparatus 250 has a reception quality measuring section 155 that measures the quality of received signal from apparatus 200 (col. 9, paragraph 0072), and return an ACK or a NACK signal as well as directivity switching signal to determine if directivity has to be changed (col. 10, paragraph 75). Apparatus 200 further comprises an array directivity switching controlling section 201 which output information to transmission array directivity controlling section 105 based on the directivity switching signal (col. 11, paragraph 0083). EP '051 also discloses a modulating section 103 for data modulation (col. 2, paragraph 0012-0013). Note that modulating section 103 is in both embodiment 1 and 2. When sections 103, 104, 105 work together with all the directivity modulation steps described above, packet can be modulated based on quality information (directivity switching signal). Sections 201 and 105 form a control section. After array directivity switching controlling section calculates the weight to be transmitted at each antenna based on the arrival directivity information and then output (transmit) the weight to transmission array directivity controlling

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section 105 and output information to change the directivity of the array antenna (col.9, paragraph 0070).

14. Regarding claim 6, EP '051 teaches based on directivity switching signal, the array directivity switching controlling section 201 outputs an information to change the directivity to the transmission array directivity controlling section 105 (col. 11, paragraph 0083). Since the reference does not disclose about directivity change in certain time or after certain cycle, so it is reasonable to say the directivity is the next directivity to be switched to and hence data packet is transmitted with the switched directivity. Quality of packet data sent with directivity will be measured at reception quality measuring section 155 at the communication apparatus 250, and quality information will be sent back to apparatus 200, as discussed in claim 4 above.

15. Regarding claim 8, EP '051 teaches a communication apparatus 200 comprising:

notifying for switching directivities with which packet data is transmitted (col. 11, paragraph 83), which is also information for the next directivity to be switched (see claim 6 above);

modulating data based on quality information (col. 2, paragraph 0012-0013; col. 8, paragraph 0066-paragraph 0067);

and transmitting data with directivity (col. 9, paragraph 0067). Note that data will be transmitted once it is outputted to antenna.

16. EP '051 also teaches communication apparatus 250 comprises transmitting reception quality information (ACK/NACK) after receiving the signal from communication apparatus 200, so it is at a time after the switching time. Apparatus 250 further comprises measuring reception quality information and output the information to array directivity switching determining section

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251. Array directivity switching determining section 251 determines whether to change the directivity or beam width of transmission array antenna based on the stored reception quality information (col. 10, paragraph 0075).

17. EP '051 teaches the directivity switching information (col. 10, paragraph 0075), but does not teach the directivity switching timing information. EP '609 teaches a base station apparatus for communicating with high-speed and low speed communication spread spectrum mobile users. EP '609 teaches a circuit which receives values of the delay time sent from the base station (col. 12, line 23-25). This provides timing information for a receiver to modulate signals with different directivities (col. 11, line 5-38). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to switch directivity at proper time and hence minimizes power consumption at the receiver, as taught by EP '609.

18. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP '051 in view of EP '609 as applied to claim 3 above, and further in view of Sawahashi et al. (US Patent 6,069,912, hereafter Sawahashi).

19. The references as applied above teach all limitations and in addition, EP '051 further teaches reception quality measuring section 155 measures quality of the received signal outputted from the radio reception 153 and outputs the measured reception quality information to an array directivity determining section 251 (col 9, paragraph 0072). According to the abstract of EP '051, reception quality information is stored in array directivity switching determining section.

20. However, the references fail to teach the measuring of reception quality using switched directivity information and reception quality information. Sawahashi teaches measuring the

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received SIR one or more times while rotating the directivity of the antennas at predetermined intervals (col. 5, line 15-17). To do so, Sawahashi teaches method of providing maximum SIR by using a received SIR measuring unit for measuring an SIR of an output signal of an adder which enables an antenna directivity controller 913 to control the directivity of the antenna in response to the measured SIR through antenna directivity generators (col. 13, line 10-18; col. 11, line 12-16). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the invention by EP' 051 to measure reception quality using directivity switching information and quality information to provide maximum SIR.

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ikeda et al. (US Patent 5,583,852) teaches mobile unit having controllable directivity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Lai whose telephone number is (571) 270-1208. The examiner can normally be reached on Monday – Thursday, 9:00 a.m. – 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Garber can be reached on (571) 272-2194. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the

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Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DL

D.L.



CHARLES D. GARBER
SUPERVISORY PATENT EXAMINER